UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/630,451	07/30/2003	Katia Vancompernolle	2676-6045US	5403

24247 7590 02/09/2005

TRASK BRITT
P.O. BOX 2550
SALT LAKE CITY, UT 84110

EXAMINER	
FRONDA, CHRISTIAN L	

ART UNIT	PAPER NUMBER
1652	

DATE MAILED: 02/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/630,451	VANCOMPERNOLLE, KATIA	
	Examiner	Art Unit	
	Christian L Fronda	1652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 November 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) *3-17* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2 and 18-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Applicants' affirmation of the provisional election without traverse of Group I (claims 1, 2, and 18) in the **AMENDMENT** dated 11/15/2004 is acknowledged. Claims 3-17 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention. The requirement is still deemed proper and is therefore made FINAL.

2. Claims 1, 2, and 18-20 are under consideration in this Office Action.

3. The rejection of claims 1, 2, and 18 under 35 USC 101 as being directed to non-statutory subject matter has been withdrawn in view of applicants amendment to the claims. The amended claims now recite "An isolated biologically active human phosphorylated glyoxalase I".

Claim Rejections - 35 U.S.C. § 112, 2nd Paragraph

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1, 2, and 18-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regards as the invention.

The claims recite the phrase "biologically active" which renders each of the claims vague and indefinite. The scope of this phrase is not clear because the phrase is not always interpreted as limiting the polypeptide to being enzymatically active, but also includes other biological functions such as being able to generate antibodies to the polypeptide.

Amending the claims to recite the following many overcome the rejection: "an isolated phosphorylated polypeptide having glyoxalase I activity".

In claim 18, line 3, the phrase "treating a cell" renders the claim vague and indefinite. The scope of this phrase is unclear since it is not certain what specific types of cells are encompassed by the phrase. For example, it is not known if a human protein can be produced and isolated by treating a bacterial or fungal cell with TNF.

Claim Rejections - 35 U.S.C. § 112, 1st Paragraph

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claim 18 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for treating a mammalian cell with TNF in the production of the glyoxalase I of claim 1, does not reasonably provide enablement for treating any cell such as a bacterial cell or fungal cell in the production of the glyoxalase I of claim 1. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

Factors to be considered in determining whether undue experimentation is required, are summarized In re Wands [858 F.2d 731, 8 USPQ 2nd 1400 (Fed. Cir. 1988)]. The Wands factors are: (a) the quantity of experimentation necessary, (b) the amount of direction or guidance presented, (c) the presence or absence of working example, (d) the nature of the invention, (e) the state of the prior art, (f) the relative skill of those in the art, (g) the predictability or unpredictability of the art, and (h) the breadth of the claim.

The nature and breadth of claim18 encompass a treating any cell with TNF to produce the phosphorylated glyoxalase I of claim 1. The specification provide guidance for treating mammalian L929 cells from mouse with TNF to in the production of the phosphorylatated glyoxalase I of SEQ ID NO: 1. However, the specification does not provide guidance or prediction on whether any cell such as bacterial or fungal cells treated with TNF can produce the claimed phosphorylatated glyoxalase I of claim 1.

Thus, the amount of experimentation to determine the whether any cell such as bacterial or fungal cell can be treated with TNF and then produce the phosphorylatated glyoxalase I of claim 1 is undue and outside the realm of routine experimentation since trial-and-error experimentation would be required to search and screen for the specific cells that can be treated with TNF and then produce the claimed phosphorylatated glyoxalase I. Searching and screening for the invention is not guidance for making the claimed invention.

The Examiner finds that one skilled in the art would require additional guidance, such as information regarding the specific cells that can be treated with TNF and then produce the phosphorylatated glyoxalase I of claim 1. Without such a guidance, the experimentation left to those skilled in the art is undue.

8. Claims 1 and 18 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Applicants' arguments filed 11/15/2004 have been fully considered but they are not persuasive. Applicants' position is that the claims as amended now recites a human phosphorylated glyoxalase I and that the specification provides an adequate written description for a human phosphorylated glyoxalase I. The Examiner respectfully disagrees for reasons of record as supplemented below.

The claims as amended are genus claims that are directed toward any human phosphorylated glyoxalase I of any amino acid sequence and structure. The scope of the claims includes many human phosphorylated glyoxalase I enzymes with widely differing structural, chemical, and physical characteristics. Furthermore, the genus is highly variable because a significant number of structural differences between genus members exists.

The specification discloses a human glyoxalase I consisting of the amino acid sequence of SEQ ID NO: 1. However, the specification fails to provide a written description of additional human glyoxalase I enzymes as encompassed by the claimed genus. Neither the specification nor the general knowledge of those skilled in the art provide evidence of any structure which would be expected to be common to the members of the genus. Thus, the disclosed human glyoxalase I consisting of the amino acid sequence of SEQ ID NO: 1 is not representative of the claimed genus since other members of the genus are expected to have amino acid sequences and structures that are different from the said human glyoxalase I consisting of the amino acid sequence of SEQ ID NO: 1.

Furthermore, in the instant specification, a single "human" phosphorylated glyoxalase I polypeptide is described as SEQ ID NO: 1. Those sequences that are "human" are a subset of this genus of polypeptides. The specification fails to define those structural features of SEQ ID NO: 1 that are commonly possessed by members of the genus that distinguish them from other "non-human" polypeptides. Thus, one skilled in the art cannot visualize or recognize the identity of the members of the genus. As such, this single representative species does not adequately describe this subset according to its structure so that one of skill in the art can visualize and distinguish those amino acid sequences that are human, particularly in view of the larger genus that includes both human and non-human sequences.

The Court of Appeals for the Federal Circuit has recently held that a "written description of an invention involving a chemical genus, like a description of a chemical species, 'requires a precise definitions, such as the structure, formula [or] chemical name,' of the claimed subject matter sufficient to distinguish it from other materials." *University of California v, Eli Lilly and Co.* 43 USPQ2d 1398 (Fed. Cir. 1997), quoting *Fiers v. Revel,* 984 F.2d 1164, 1171, 25 USPQ2d

1601, 1606 (Fed. Cir. 1993) (bracketed material in original). To fully describe the genus of genetic materials, which is a chemical compound, applicants must (1) fully describe at least one species of the claimed genus sufficient to represent said genus whereby a skilled artisan, in view of the prior art, could predict the structure of other species encompassed by the claimed genus and (2) identify the common characteristics fo the claimed molecules, e.g. structure, physical and/or chemical characteristics, functional characteristics when coupled with a known or disclosed correlation between function and structure, or a combination of these. Therefore, the instant claims are not adequately described.

In view of the above considerations, one of skill in the art would not recognize that applicant was in possession of the necessary common features or attributes possessed by members of the genus human phosphorylated glyoxalase I enzymes of any amino acid sequence and structure.

Claim Rejections - 35 U.S.C. § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 1, 2, and 18 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Ranganathan et al. (J Biol Chem. 1993 Mar 15;268(8):5661-7; PTO 1449) in view of Pestka et al. (Protein Expr Purif. 1999 Nov;17(2):203-14; PTO 892).

Applicants' arguments filed 11/15/2004 have been fully considered but they are not persuasive. Applicants allege that phosphorylation of biologically active unphosphorylated protein leads to inactivation of the protein. Applicants note that the cited Ranganathan et al. suggests that the four possible phosphorylation sites in the human glyoxalase I amino acid sequence are within a putative catalytic domain. Applicants allege that phosphorylation at these four possible phosphorylation sites would alter the structure of the enzyme, and thus not lead one of ordinary skill in the art to phosphorylate the human glyoxalase I enzyme. In view of this, applicants argue that one of ordinary skill in the art would not expect a phosphorylated glyoxalase I enzyme to be biologically active and that there would be no motivation to phosphorylate the glyoxalase I enzyme. Furthermore, applicants argue that insertion of a kinase recognition site into the human glyoxalase I would alter the structure of the enzyme and

inactivate the enzyme, thus, there would be no motivation to phosphorylate the glyoxalase I enzyme. The Examiner respectfully disagrees for reasons of record as supplemented below.

Applicants have not provided evidence that phosphorylation of the human glyoxalase I enzyme would inactivate the enzyme nor have applicants shown that phosphorylation at the putative catalytic domain of the enzyme would result in an inactivated human glyoxalase I. Furthermore, Applicants have not provided evidence that addition of a kinase recognition site in the human glyoxalase I taught by Ranganathan et al. would lead to its inactivation.

Thus, as stated in the previous Office Action one of ordinary skill in the art at the time the invention was made would have been motivated to make a phosphorylated human glyoxalase I which can be used in a wide variety of applications as taught by Pestka et al. including pharmocokinetics, localization, and diagnostic imaging.

Conclusion

11. No claim is allowed.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christian L Fronda whose telephone number is (571)272-0929. The examiner can normally be reached Monday-Friday between 9:00AM - 5:00PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ponnathapura N Achutamurthy can be reached on (571)272-0928. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

13. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Christian L. Fronda
Patent Examiner
Art Unit 1652

Manjunath Rao
Primary Patent Examiner
Art Unit 1652